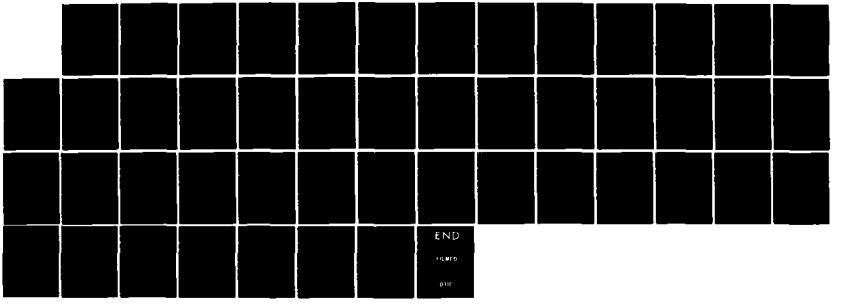
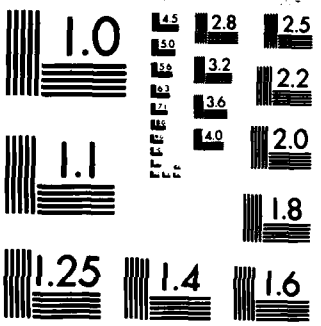
AD-A155 606 DEFENSE TRAINING DATA AND ANALYSIS CENTER (TDAC) 1/1
FUNCTIONAL DESCRIPTION(U) DEFENSE TRAINING DATA AND
ANALYSIS CENTER ORLANDO FL 27 MAR 85

UNCLASSIFIED F/G 5/1 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

AD-A155 606

(9)

DEFENSE TRAINING DATA AND ANALYSIS CENTER (TDAC)

FUNCTIONAL DESCRIPTION

27 MARCH 1984

DTIC FILE COPY

This document has been approved for public release and sale; its distribution is unlimited.

85 06 25 224

JUN 26 1985

S D

A

DEFENSE TRAINING DATA AND ANALYSIS CENTER
3280 PROGRESS DRIVE
ORLANDO, FLORIDA 32826

6/26/85

DATE: 6/25/85

N REPL
REFER

From: Boswell, Tony

To: DTIC

The enclosed Functional Descriptions describe the New Defense TRAINING DATA AND ANALYSIS Center established under Office of the Secretary of Defense, MI&L (MP&FM).

The Functional Descriptions are for general (unlimited) distribution.

Please address any questions to Mr. Tracy Mixon, TDAC, (305) 281 3600.

Tony Boswell

pproved

on statement.
ot assign
e required by
uments, 20 Nov
of this
call

n this form to
hin 20 working
of this report

File

ter,

TITLE: Functional Description

CONTRACT/GRANT NO: N/A

REPORT NO: N/A

DATE OF REPORT: 27 March 1984

DTIC FL-182, Feb 85

DEFENSE TRAINING DATA AND ANALYSIS CENTER (TDAC)

FUNCTIONAL DESCRIPTION

PREFACE

The establishment of a Defense Training Data and Analysis Center (TDAC) was recommended by the Defense Science Board (DSB) 1982 Summer Study on Training and Training Technology. The DSB recommendations were approved by the Secretary of Defense on 25 February 1983. The establishment of TDAC was initiated during the summer of 1983 as one of the major thrusts of the OSD Steering Committee on Training and Training Technology. This Steering Committee was also recommended by the DSB study to provide an OSD advocate for the Department of Defense in the training area. Working through a joint OSD/JCS/Services working group, the Steering Committee developed a TDAC terms of reference which was approved by the OSD Steering Committee on 1 November 1983 and endorsed by the Deputy Secretary of Defense on 1 December 1983. The following document describes the mission, structure and mode of operation of the Defense Training Data and Analysis Center.

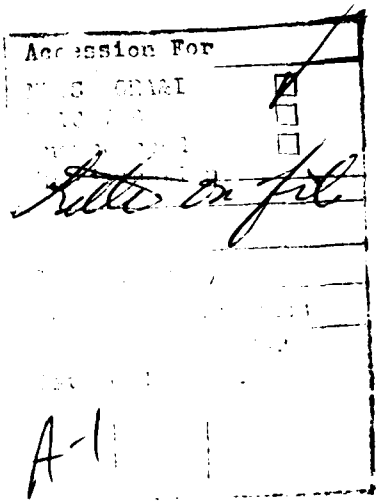


TABLE OF CONTENTS

Section/Tab	Title	Page #
I	Mission Statement	1
II	Working Relationships	3
III	Organizational Structure	4
IV	Division Charters	6
V	Mode of Operation	14

Appendix/Tab

A	Summary Matrix of Defense Science Board Recommendations
B	Memorandum from Secretary of Defense to the Secretaries of the Military Departments; SUBJECT: Defense Science Board (DSB) Summer Study on Training and Training Technology, dated 25 February 1983.
C	Memorandum from Secretary of Defense to Chairman, OSD Steering Committee on Training and Training Technology, SUBJECT: Steering Committee on Training and Training Technology, dtd 30 August 1983.
D	Approved Terms of Reference (TOR), OSD Steering Committee on Training and Training Technology, dtd 30 August 1983.
E	Memorandum from Deputy Secretary of Defense to Chairman, OSD Steering Committee on Training and Training Technology, SUBJECT: Defense Training and Training Technology Data Center, dtd 1 December 1983; and Memorandum from Chairman, OSD Steering Committee on Training and Training Technology to Secretary of Defense, SUBJECT: Steering Committee on Training and Training Technology, dtd 10 November 1983.
F	Approved Terms of Reference, Defense Training Data and Analysis Center, dtd 27 October 1983.
G	Defense Training Data Center, Defense Appropriations Bill, 1984; Senate Report 98-000, page 42.

SECTION I

MISSION STATEMENT

The Defense Training Data and Analysis Center (TDAC) is the Office of the Secretary of Defense (OSD) focal point and central repository for Defense training-related data (i.e., training technology and training management) and supports the entire Department of Defense (DOD) training community. TDAC is collocated with the Naval Training Equipment Center (NTEC) and the U.S. Army Program Manager, Training Devices (PM TRADE) in Orlando, Florida. Its major emphasis is on training requirements, policies procedures and information/data with multi-Service applications.

TDAC collects available training-related data to design, analyze, and integrate training data bases in support of its users and mission. TDAC uses existing and available data and minimizes new major data collections. The Center augments existing operational data bases by integrating them and focusing on longitudinal and historical training data for analytical purposes. While the TDAC data and data bases will address specific functional training areas and issues, they will also allow policy managers and the research and development community to include quantifiable training data and analysis in broader management and policy actions.

The specific technical objectives of the Center are:

a. Provide training data and analytical support for use in the acquisition process.

b. New training technologies that are a result of near-term technology changes/breakthroughs. Compilation of a list of the new systems and the training technologies which have the most promise for the Services and the private sector. Analysis and evaluation of emerging technologies and utilization of these technologies against present day training requirements.

c. Identification of training technology opportunities that would most benefit Reserve programs.

d. Provision of analytical support to Service training technology application efforts.

e. Analyses that link training with manpower demographics, abilities, and experience (especially in the maintenance training area).

f. Analysis and evaluation of individual and collective performance measurement systems and information for purposes of improving the effectiveness of training.

g. Development of training cost and effectiveness methodologies and data for the assessment and prediction of training value.

h. Improved communication, dialogue, and training technology transfer within the Defense training community and among Defense, the public sector, the private sector, and international activities.

SECTION II

WORKING RELATIONSHIPS

The Defense Training Data and Analysis Center (TDAC) supports and has strong ties to the entire DOD manpower, logistics and training community, including agencies reporting to the Office of the Secretary of Defense (OSD) and Service training commands, major commands, operating agencies, procurement agencies and laboratories. TDAC also coordinates, as appropriate, with the private sector, academic institutions, private research organizations, and international training activities.

Policy/program direction for TDAC is provided by the Office of Secretary of Defense. The Assistant Secretary of Defense (Manpower, Installations and Logistics), in coordination with the Undersecretary of Defense (Research and Engineering), and the OSD Steering Committee on Training and Training Technology, has primary responsibility for the specific activities of TDAC. The Navy, functioning as Executive Agent, will operate via a memorandum of agreement [MOA] with OSD to insure administrative and organizational requirements are met and supported.

The Director of TDAC has two specific responsibilities. The first is to manage and direct TDAC. The second is to provide technical and analytical support to the Assistant Secretary of Defense (Manpower, Installations and Logistics) and research and technology support to the Undersecretary of Defense (Research and Engineering). The primary OSD point of contact is the Director, Training and Education in the Office of the Deputy Assistant Secretary of Defense (Military Personnel and Force Management), who is responsible for DOD training policy.

The Director of TDAC routinely works with the Directors of DOD manpower, logistics, and training activities and with the Technical Directors of the Service manpower, personnel and training laboratories. Technical coordination/working relationships shall be clearly delineated through established memoranda of understanding. Additionally, users groups are established at the discretion of the Services' training advocates and activities.

The Defense Training Data and Analysis Center will also establish a working agreement with the Defense Manpower Data Center and other data centers to permit mutual transfer of pertinent data.

SECTION III

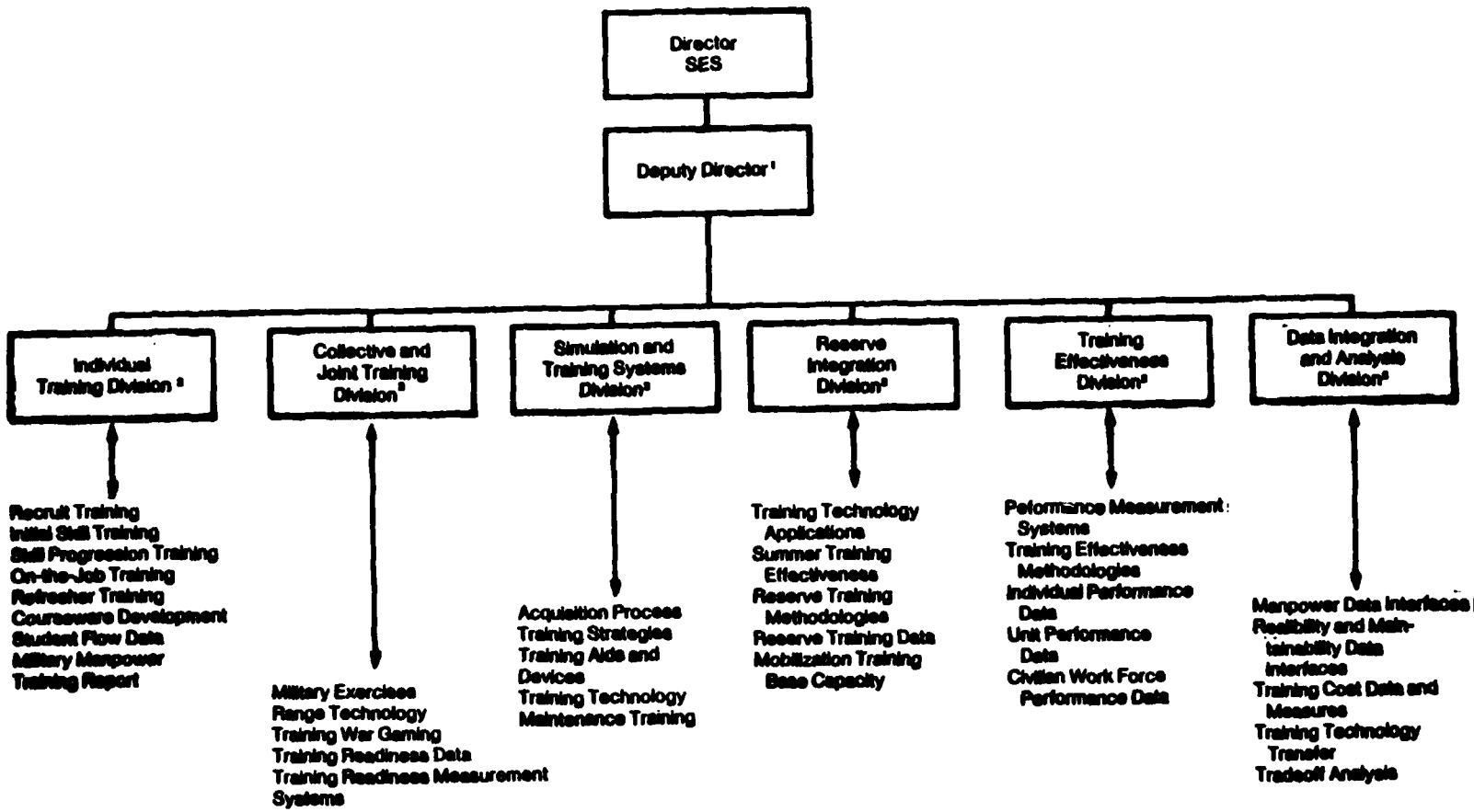
ORGANIZATIONAL STRUCTURE

The Defense Training Data and Analysis Center is staffed predominantly by Defense civilian employees with contractual analytical support and the assignment of appropriate personnel [officers] from the Armed Services to address active, reserve and civilian training issues. Funding and positions have been provided beginning in Fiscal Year 1985.

The Center has been organized into six operating divisions based on the functional areas shown on the Organizational Chart below. Although staffed to undertake autonomous activities, the divisions are responsible for insuring proper coordination and integration of data and analysis in support of the overall Center mission.

Division managers report to the Director of TDAC. They routinely work through established command structure with laboratory directors in Service research organizations and division directors in Service laboratories, Service training commands and their field activities and DOD manpower and training activities.

DEFENSE TRAINING DATA AND ANALYSIS CENTER (TDAC)
ORGANIZATIONAL CHART



[1] Military O-6
[2] GM Level-15
[3] Each Division Will Consider Training Technology in Its Own Area but the Simulation and Training Division Will Have Overall Responsibility in This Area.
[4] The Individual Training Division Will Also Focus on Maintenance Training.

SECTION IV

DIVISION CHARTERS

In order to accomplish its mission, the Defense Training Data and Analysis Center (TDAC) has been organized into six divisions which focus on the major functions of training. These are: (1) Individual Training, (2) Collective and Joint Training, (3) Simulation and Training Systems, (4) Reserve Integration, (5) Training Effectiveness, and (6) Data Integration and Analysis. Collectively, these functional areas satisfy the training data mandate established by the Defense Science Board 1982 Summer Study on Training and Training Technology and subsequently approved by the Secretary of Defense.

The TDAC divisions are designed to operate autonomously to accomplish their assigned mission. The division chiefs serve as the Center's principal sources of expertise for their assigned functional area. Hence, they provide an in-depth knowledge of data availability, quality, deficiencies and needs; coordinate with and collect data from the Services; and, where necessary, serve as advocates to improve and/or correct training data. Additionally, in conjunction with the Director of TDAC, the division chiefs also prioritize, plan and accomplish TDAC initiatives in response to the DOD training community. Their product is information needed for decision-making. This includes data analysis, data descriptions and statistical reports for OSD, the Services, Congressional and other oversight committees, the private sector, the general public, and international training activities. Specific charters of each division follow.

Individual Training Division

The Individual Training Division will collect, consolidate, and store data related to courses conducted by training institutions whose predominant mission is the training of individuals. The division charter also includes the on-the-job training (OJT) which supplements or substitutes all or part of formal course training requirements.

The division will oversee, on behalf of OSD, the collection, quality control, database structuring, and storage of historical data related to three major areas of Service individual training. First, Service data related to school success in recruit, initial skill, and skill progression training will be collected. The specialized skill training data will include refresher training and on-the-job training performed in units. Second, the division will collect and analyze data related to the procedures and costs required to develop, implement, deliver and revise courseware that supports this training. Third, the data related to student flow through the Service's training pipelines will be analyzed in order to derive a common set of training-related parameters. This

analysis will include data on training loads, course length, and the manpower and base operations requirements necessary to conduct and support individual training.

The division will collect data and create new data bases to permit evaluation of alternative strategies for developing specific occupational skills; e.g., comparisons between components and Services for training similar military occupational specialties (MOS) or skills.

The division will explore existing civilian work force data bases, assess the quality of these data and store the information for analytical purposes.

The division will also track individual training for maintenance and flight activities, and collect and review data related to officer acquisition training and professional development education. The division will assist OASD(MI&L) in the compilation of the annual Military Manpower Training Report and will provide analytical support for the Government Employee Training Act (GETA) annual report, as appropriate.

Collective and Joint Training Division

Collective training is the training of operational units required to develop and maintain cohesive and capable teams. Collective training refers to training of groups of individuals at crew/squad/section level up to fleets, field armies and joint and combined commands. Joint training is defined as that involving two or more services. Collective and joint training prepares units for likely wartime missions and maintains them in a prescribed state of training readiness.

The Collective and Joint Training Division, in cooperation with the other TDAC divisions Service operational commands and research organizations, and joint activities will collect data needed to improve the quality of: collective training strategies; methods of collective training; ranges and other unit training facilities; simulation for wargaming and other unit training purposes; measures of training readiness and joint training initiations, systems and issues. In carrying out this mission, the Collective and Joint Training Division will: devise methods for the retrieval and maintenance of data and information on collective and joint training; collect, store and analyze data; identify weaknesses in collective and joint training which can be alleviated through development of alternative training strategies and/or the application of technology; perform cost-effectiveness analyses of alternative training methods; propose and justify new training strategies; and design improved methods of measuring training readiness. Particular attention will be paid to methods of supplementing and complementing collective and joint training that is constrained by limitations on air and ground space, difficulties in achieving realism in training, or exceptionally high cost.

Simulation and Training Systems Division

The development of training equipment and course materials for a total training system requires an assessment of alternative development approaches, system procurement strategies, and implementation strategies. Central to decision-making in this process is the expected performance of alternative simulation and training systems. The extremely high investment and support costs for modern training hardware, software and course materials mandate the best possible use of historical data and cumulative experience on the performance of systems currently used for training delivery. The data base required to support effective decisions combines details on training problems, training system characteristics, and methods of implementation, together with effectiveness of the systems in actual use. Methodologies for forecasting training system performance also are required to integrate these data into quantitative estimates of system success prior to acquisition.

The Simulation and Training System Division will collect and analyze technical data and develop predictive methodologies in support of comparative analyses of training systems performance for systems both in the acquisition process and in the field. For training systems currently in Service use, the data base will contain information on training requirements and training analyses used to define system design, simulator design parameters and engineering characteristics, simulation fidelity and cost trade-offs considered, transfer of training, use of actual and/or simulated equipment for training, and other system-related and background data pertinent to establishment of system performance baselines for comparative purposes. Data and analysis will be designed to assist the Services in training system acquisition and the inclusion of training considerations in total system design of planned systems throughout the design, development and production process. The division will also support Joint-Service study of common training and training research issues and will collect data on the training required and provided for those in the acquisition process. Finally, the division will have prime responsibility for the Center in the training technology and maintenance training area for both the military and civilian work forces.

Reserve Integration Division

It is well established that the United States could not prevail in a major armed conflict without significant involvement of the combat ready reserve forces. Yet, the part time nature of the reserves makes training especially challenging, since reservists only drill on weekends and train for two weeks during the summer. Despite the dependance on the reserves and the difficulties noted, reserve training data and analysis have not received the analytical or management attention they deserve. The Reserve Integration Division is completely devoted to reserve training data collection and analysis.

A primary focus of this division is on reserve training information and on the transfer and transition of training technology, devices, equipment, and courseware from the active to reserve (National Guard Armory) environment and between reserve components. Included in this charter will be efforts to review and identify those training devices and training technologies for the active force (regardless of Service) that would adapt well and assist reserve training efforts.

While the transfer of training related technology and information between/among the active and reserve forces has tremendous potential payoff, the division will also focus on the training related problems or challenges which are possibly unique to the reserves. The division will be responsible for the collection, quality control and storing of reserve-specific training data for analytical purposes such as weekend training, summer refresher training by military occupation and the reserve unique training strategies and devices focused on the reserve mission. The division will track the type, quantity and usefulness of training equipment, manpower and facilities provided to the reserves to satisfy their training mission and the plan for potential improvements in this important area.

The Reserve Integration Division will collect data relevant to mobilization training base capacity issues. The division will store this information for analytical purposes and help track the surge training requirements, capacity, resources, training equipment and manning for all the Services and particularly for the land combat forces in various scenarios.

Finally, the division will work with and through the other divisions on all reserve-related issues and data. For instance, working through the Training Effectiveness Division, the Reserve Integration Division will assist in the in identification, tracking, collection and quality control of reserve individual and unit performance data. Similar relationships and responsibilities will apply between the Reserve Integration Division and other divisions, particularly the Individual, Collective and Joint, and Simulation and Training Systems Divisions.

In summary, the Reserve Integration Division will work through the other TDAC divisions in those cases where similar data are collected for both the active and reserve forces. The Reserve Division will have the prime TDAC focus for Reserve unique data (e.g., mobilization training, summer training) and for those cases where data voids exist in reserve training information.

Training Effectiveness Division

Training effectiveness data is an essential component of any effort to assess and manage training. To generate this information, a performance measurement program must be established to collect data and develop methodologies for the collection of job performance information. Once established, this program will develop valid measures of training effectiveness which can be used to evaluate and support training development, acquisition and management of training as well as appraise the potential of new training technologies.

The Training Effectiveness Division will: oversee, on behalf of OSD, the development and validation of job performance measurement methodologies; collect and analyze data relating to individual and unit performance; develop training effectiveness measures; and conduct training effectiveness analyses. The performance and effectiveness data will be maintained at TDAC for use in Joint-and Service-specific studies.

The Division will be the OSD advocate for and work with the Services (e.g., the research and development, policy and operational communities) for collecting and storing individual, collective performance and civilian work force data. Background information will be collected, whenever possible, to enhance the chances of linked data files and to facilitate cohort analyses. In addition, the division will collect and review for accuracy of existing performance data and will work with the Services to improve the existing information and fill information voids. The division will also take the lead for the Center in integrating performance information with training cost data and other manpower/training/ logistics data to help explore and develop methods to better assess training effectiveness. Development and validation of active enlisted force individual job performance measures will be executed through management and support of the Joint-Service Job Performance Measurement Program and in conjunction with the Service laboratories.

Data Integration & Analysis Division

The data and focus of TDAC will provide a unique asset to the Defense training community. The wealth of training-related data stored at TDAC will be organized and directed solely to support management and analytical programs. While the TDAC data and data bases will address specific functional training areas and issues, they also will allow policy managers and the research and development community to include quantifiable training data and analysis in broader management and policy actions.

The Data Integration and Analysis Division will be the TDAC focal point for interface with internal TDAC data bases and those not maintained by TDAC. The division will insure that the TDAC data bases and information are linked both among themselves and with related data bases and systems not maintained by TDAC. For instance, the division will insure that the TDAC data can be matched, integrated, and linked with appropriate manpower data from the Defense Manpower Data Center, other manpower data sources and the varied data bases that maintain system reliability and maintainability information. These linkages will be used two ways. First, they will allow the training aspect of broader issues to be quantified and addressed in an analytical manner. Second, the linkages will allow the training community to consider and incorporate non-training information into training issues, policies and analyses. As an example of this responsibility, the Data Integration and Analysis Division will have a major role in assisting the Simulation and Training Devices Division to link its system-related training information with the performance data collected on fielded systems.

This division will also have the prime responsibility to integrate the information collected by the other TDAC divisions, to perform analyses that cut across the TDAC divisions and to be the prime activity involved in training trade-off analyses and reviews. In this regard, this division will take lead for TDAC in dealing with the private sector on training technology transfer. Finally, the division will take the lead for the Center in developing, collecting, and integrating training cost data and measurement information.

SECTION V

MODE OF OPERATION

The Defense Training Data and Analysis Center (TDAC) collects training related data to design, analyze and integrate data bases in support of its users and mission. TDAC uses existing and available data and minimizes new major data collections. The TDAC program is designed to accumulate data relative to the value of current training; its future directions; and the impact on training of changing policies, personnel and equipment. As required, TDAC establishes appropriate memoranda of understanding with the Services and other sources of data required to support this program.

Procedures for accessing TDAC support and/or data have been established to insure efficient and appropriate operations. The Office of the Secretary of Defense (OSD) has access to all data collected and/or produced by TDAC. Staff from the Office of the Assistant Secretary of Defense (Manpower, Installations and Logistics) interface directly with TDAC; other OSD staff and the Services also coordinate routine requests for support directly with TDAC. Each Service has complete access to data originating and/or collected within its units, activities, agencies and headquarters. Outside claimants, extraordinary support requests and any Service desiring data generated by other Services must receive clearance through OASD (MI&L) prior to accessing TDAC.

TDAC will maintain and use, for analytical purposes, individual and collective performance data which includes social security number (SSN) and unit identification code (UIC). However, these data will not be released from the TDAC data base by SSN or UIC without the explicit approval of the Service involved.

Since technology transfer and data related to effectivness of technology is of value, it is an important function of TDAC, liaison personnel may be assigned to the Center by the Services. Exchange billets may also be established for appropriate Defense agencies and Armed Forces representatives of allied nations. Arrangements also may be made with other government agencies and the private sector. Resources to support such activities are provided by the parent Service or organization. Similarly, new missions related to and consistent with the TDAC charter, defined in this document, can be accepted with concurrance from TDAC sponsors; however, in general new valid taskings which require program increases above the resource baseline will necessitate reimbursing of resources by the requesting Service, Government Agency or private organization.

Initial facility and administrative support for TDAC is to be provided by a working agreement between the Navy and OSD. Primary local service and support will be provided by the Naval Training Equipment Center (NTEC). Automated data processing (ADP) resources

will initially be obtained via short-term lease; an ADP plan will be developed during Fiscal Year 1984/85 to insure cost-effective acquisition of subsequent ADP assets/resources.

APPENDICES

TABLE B-1 - OPERATIONAL TRAINING

STATUS:

- Current training effectiveness is good, but not good enough
- Basis of training assessment
  - studies
  - audits
  - joint exercise reports
  - service evaluations
- Proficiency gap

FINDINGS	RECOMMENDATIONS
LEADER DEVELOPMENT Leader training at all levels is inadequate. Senior operational commanders need greater opportunity to participate in commander/staff exercises.	• Develop campaign, battle, engagement simulations and operationally realistic war games. • Formulate vigorous training programs in all field units.
COMMAND TRAINING • Insufficient training in tactics for commanders	ASW Commander's Tactical Action Game • Micro computer-based game for individuals and teams • Machine provides environment, opposition, execution of orders • For use by fleet ASW training centers, type/fleet commanders, tactical group commanders
• Low cost media needed	Tactical Action Situation Games • Paper medium, produced in quantity • Self-paced programmed instruction • For use by NCOs to senior officers
UNIT TRAINING Successful training methods exist, but funding is inadequate.	• Increase funding of known successful methods.
Improved methods and devices (technology) needed, with funding	• Develop concentrated thrust in R&D to exploit new technology

TABLE B-1 (cont'd)

FINDINGS	RECOMMENDATIONS
NATIONAL GUARD AND RESERVE TRAINING	
Unique needs -- not well met • Limited training time • Dispersed location • Equipment deficiencies	• Tailor and deliver training support material to Reserve Components.
JOINT/COMBINED TRAINING	
Not enough practice in multi-service operations	• JCS, each CINC, develop realistic exercises, simulations and war games
Lessons learned are being forgotten	• Extract problems, prioritize, and fix them
RANGES (AIR, LAND, SEA)	
Encroachment, restriction on expansion, priority conflicts, equipment limitations	• JCS provide position to OSD to get/keep ranges • Provide/augment range equipment, threat simulation (physical and electronic) • Develop concentrated thrust in R&D to exploit new technology

TABLE B-2 - MANPOWER REQUIREMENTS AND SKILL TRAINING

STATUS:

- Recruit quality and quantity goals met in FY 1981; FY 1982 will be even better, but...
- Future shortages may be anticipated
  - declining manpower pool, changing demographic mix, expanding economy
  - increasing skill requirements
- Training technology offers significant and exciting solutions to some of the challenges.
- More and better data are needed to guide future applications.

FINDINGS	RECOMMENDATIONS
Demographic projections and "technology creep" indicate manpower problems of numbers and richness of mix.	• Use technology to simplify operator/maintainer tasks. • Explore self-motivating arcade-like devices to increase performance level of recruits. • Require use of contemporary analytic methodology such as Navy HARDMAN to match hardware to people.

TABLE B-2 (cont'd)

FINDINGS	RECOMMENDATIONS
Educational deficits can result in serious under-utilization of recruits' talent.	• Develop technology to match instruction to ways recruits learn best. • Use innovative ways to provide necessary English language skills. • Use technology such as video disk trainers in school and field to teach students about equipment. • Use transportable devices in the field to broaden knowledge and skills for career growth and leadership.
Benefits of computer assisted instruction (CAI) and new technology for field refresher and other training are limited by slow introduction into the training base.	• Develop innovative ways to make trainers accept technology changes such as CAI, and learn to use them. • Accelerate introduction of CAI into the schoolhouse to allow transportability of this training to the field. • Build CAI into training packages of all new operational systems.
Adequate data not yet assembled to determine cost-effectiveness of training methods and devices.	• Undertake demonstration projects and provide high technology testbeds for training and performance measurement. • Direct, where possible, embedded training and performance measurement be built into new systems. • Develop and adopt quantitative performance measures. • Establish a repository for all training data.

TABLE B-3 - TRAINING TECHNOLOGY

STATUS:

- Microprocessor based, interactive video disk systems have revolutionized the instructional industry.
- DoD need not fund the entire technology, but only its special needs.
- Software, including courseware development, is the dominant cost factor for computer-based instructional systems.
- Potential exists for improved training and performance measurement using embedded simulation and stimulation.
- New technologies, such as VHSIC, advanced storage techniques, voice synthesis and recognition will produce improvements useful in training.

FINDINGS	RECOMMENDATIONS
Advanced software techniques exist which promise gains in software/ courseware production efficiency, but they are not yet applied.	SHORT TERM: • Encourage use of common courseware modules and "user friendly" interfaces (artificial intelligence-based). • Direct future CAI acquisitions to specify transportable software, including operating systems. LONG TERM: • Direct machine intelligence R&D efforts in automatic programming, information extraction, expert systems, and "good teacher" models to reduce courseware production costs.

TABLE B-3 (cont'd)

FINDINGS	RECOMMENDATIONS
Weapon systems based on digital technology can be used to provide more effective training and performance measurement with little additional cost.	• Embedded training: new weapon systems should include means of providing simulated targets and environmental conditions. • Develop and incorporate performance measurement capabilities in new weapons systems.
Satellite communications capacity exists that may be used for remote training, maintenance, technical manual updating, and maintenance teleconferencing.	• Develop cost-effective ground stations with hardcopy and video recording capability. • Pursue technologies related to data compression. • Establish a group from the training commands to explore satellite capability.
Injection of war-time realism into engagement simulation and stimulation.	• Increase research to determine amount of fidelity required for individual and unit simulations. • Introduce into training as soon as feasible.
Critical training technologies need additional emphasis and focus by USDRE.	• USDRE assign responsibilities within DARPA and Services for emphasis on key technologies -- such as: - voice recognition and synthesis - voice forwarding and speech storage - interactive display technology (soft and hard) - personal microprocessor training aids • Use advanced training devices as testbeds for application of VHSIC (very high speed integrated circuits). • Establish "brainstorming" sessions with industry to develdevelop new ideas.

TABLE B-4 - ORGANIZATION AND ACQUISITION

STATUS:

1. OSD and Joint Chiefs not tuned to Services' training management and training technology needs.
2. Control and management of 6.1-6.4 training technology funds are fragmented within most of the Services. This fragmentation causes inadequate emphasis and/or acceptance of new training technologies.
3. Currently available data on individual/collective performance is not sufficient to support effective management of training resources (system and non-system).
4. Training devices often seriously lag the introduction of new weapon systems.
5. Service laboratories direct very little effort to the potential improvements in training through the application of contemporary technologies.

FINDINGS	RECOMMENDATIONS
The need for proper training management and training technology mandates that OSD establish the proper environment to support the training initiatives of the Services and JCS.	• Establish an OSD Steering Committee for Training matters.
A single proponent within each Service for consideration of new training technologies and devices is needed.	• SECDEF direct the Services to provide a single proponent within each Service for consideration of new training technologies and devices.

THE SECRETARY OF DEFENSE

WASHINGTON, THE DISTRICT OF COLUMBIA

25 FEB 1983

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS

SUBJECT: Defense Science Board (DSB) Summer Study on Training and Training Technology

I have approved the recommendations made by the Defense Science Board to improve training by application of technology. The report and approved implementation plan are attached. I have asked the Under Secretary of Defense for Research and Engineering (USDRE) to take the lead in initiating the actions called for in the plan. I have also asked the Assistant Secretary of Defense for Manpower, Reserve Affairs and Logistics (ASD/MRA&L) to assist in this effort. I am confident that the implementation of the DSB recommendations will improve our readiness significantly.

There are four areas that, in my view, demand special consideration and the following specific guidance.

1. The DoD must increase its funding and management emphasis on the development of training technology and the use of this technology to address training problems. We must take advantage of current technology and press the research of emerging technologies to develop ways to make training more efficient and effective. To support this effort, it will be necessary to develop performance measures and criteria for use in determining performance levels and cost effectiveness of alternative training methodologies.

2. Each Service should accelerate efforts to apply technology to meet the training needs of the Reserve Components. This investment has the potential for very high payoff and merits a high priority. I ask that MRA&L coordinate this effort.

3. There is an urgent requirement to upgrade our land, sea and air ranges to make them as compatible as possible with the needs of the systems being tested and fielded. Since there are clear limits to real estate and air space, the capabilities of existing ranges must be expanded and made more versatile. Each Service should review range requirements and budget funds to upgrade range capabilities to include realistic threat simulation and instrumentation for total operator/system performance evaluation.

4. A major continuing weakness of the overall training system is the absence of high-level perspective and proponency for training technology. This is true, with some exceptions, in both OSD and the Services. I expect that each of you will create an advocate for training and training technology within your own secretariat. General Vessey has offered to take the lead in establishing an OSD Steering Committee for training and training technology. I endorse this initiative and direct the Committee to consolidate advocacy consideration within OSD on matters related to the effective exploitation of training technology.

I trust that you are as impressed as I am with the quality of the DSB study and will support all of its recommendations. I am requesting the OSD Steering Committee include in its charter a process to review the implementation status of these recommendations as well as other actions taken to strengthen training.

Attachment

THE SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

30 AUG 1983

MEMORANDUM FOR THE CHAIRMAN, OSD STEERING COMMITTEE ON TRAINING AND TRAINING TECHNOLOGY

SUBJECT: Steering Committee on Training and Training Technology

I have reviewed the Terms of Reference for the OSD Steering Committee on Training and Training Technology and approve them. It is quite apparent that the Steering Committee is on the right track toward implementing the recommendations of the Defense Science Board on this subject that I endorsed in February 1983.

The Steering Committee should emphasize through the planning, programming, and budgeting system the importance of adequate funding and support for programs you identify that will enhance training effectiveness through the use of technology. It is particularly important to give high priority to joint-Service research and development programs. In this regard, the training data center offers excellent promise and warrants expeditious development. I cannot overstate the importance of your efforts to enable the Department to realize significant improvements in the readiness of our forces and look forward to seeing the results of your efforts.

Terms of Reference

OSD Steering Committee on Training and Training Technology

1. Basis of Establishment. The OSD Steering Committee on Training and Training Technology was established for the exchange of information among the Services and appropriate Defense Agencies as to the availability and efficiency of technology for the support of training, and as a proponent for training. It was based on a recommendation of the Defense Science Board, by a memorandum of 25 February 1983 from the Secretary of Defense to the Secretaries of the Military Departments, subject: "Defense Science Board (DSB) Summer Study on Training and Training Technology." The memorandum states in part:

> "A major continuing weakness of the overall training system is the absence of high-level perspective and proponency for training technology... (The Chairman of the Joint Chiefs of Staff) has offered to take the lead in establishing an OSD Steering Committee for training and training technology. I endorse this initiative and direct the Committee to consolidate advocacy consideration within OSD on matters related to the effective exploitation of training technology."

2. Statement of Purpose. The purpose of the OSD Steering Committee on Training and Training Technology (hereinafter referred to as "The OSD Steering Committee") is to:

a. Implement the recommendations of the Defense Science Board by applying technological initiatives to those training functions in which performance can be improved or resources saved through technological means.

b. Make recommendations, as appropriate, concerning research, development, and acquisition of advance technology that will enhance training.

c. Serve as a proponent for and monitor the implementation of the Defense Science Board's recommendations on training and training technology.

d. Determine the functions and terms of reference applicable to the development of a training data and analysis center.

3. Scope of Effort. Because of the size, complexity, and diversity of Service training programs and inherent training responsibilities of the Services, the committee will:

a. Concentrate its efforts on those aspects of training technology that could most benefit from an OSD level perspective.

b. Identify technologies that have a high pay-off for the improvement of training effectiveness and efficiency in all Services.

4. Definitions

a. Training is instruction and applied exercises directed toward the acquisition, retention and transfer of military skills. For purposes of this document, the term "training" includes the training of individuals in formal schools or while members of operational units; the collective training of crews and units of all sizes; joint training of forces of two or more Services; and education of military personnel.

b. Training technology is the process leading to the development, application and evaluation of systems, techniques and devices to improve learning and performance.

5. Composition

a. The OSD Steering Committee consists of senior members appointed by the Under Secretary of Defense (Research and Engineering), the Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics), the Assistant Secretary of Defense (Comptroller), the Director, Program Analysis and Evaluation, and the Chairman of the Joint Chiefs of Staff.

b. The Chairman of the OSD Steering Committee will be nominated by the membership and appointed by the Secretary of Defense. The initial chairman will be designated by the Chairman of the Joint Chiefs of Staff in accordance with the memorandum of the Secretary of Defense dated 25 February 1983.

c. A Working Group of staff members from the offices of the principal members will be appointed to undertake such tasks as the OSD Steering Committee may direct.

6. Organizational Relationships

a. In accordance with the direction of the Secretary of Defense in his memorandum of 25 February 1983, the Secretary of each Military Department will appoint a senior official from within his Secretariat as the advocate for training and

training technology for his Military Department. Military Department advocates will:

(1) Serve as principal points of contact between the Military Services and the OSD Steering Committee.

(2) Represent the Military Services at OSD Steering Committee meetings when matters of concern to the Services are under discussion. Military Service participation is also welcomed.

(3) Provide such reports, data and other information to the OSD Steering Committee as the Steering Committee may request.

(4) Encourage the development and application of cost-effective training technology within their respective Departments.

b. The OSD Steering Committee will report, as appropriate, to the Secretary of Defense. Recommendations that do not require specific Secretary of Defense approval, as for example when a consensus exists between the OSD Steering Committee and affected Services on a given issue, will be made by the OSD Steering Committee.

c. Recommendations of the OSD Steering Committee will normally be implemented through the Planning, Programming and Budgeting System process.

d. These organizational relationships do not supersede the relationships and responsibilities within the Department of Defense that are specified by statute or DOD Directives.

e. The Steering Committee will not attempt to duplicate the efforts of the Defense Education and Training Executive Committee (DETEC) or the Interservice Tra ing Review Organization (ITRO). However, there may be instances where interests overlap among the committees, or the Steering Committee may require information from DTTEC and ITRO.

7. Methods of Work

a. The OSD Steering Committee will meet at the call of the Chairman but not less frequently than twice each year.

b. The agenda for meetings will be specified by the Chairman based upon recommendations of the Working Group.

c. In addition to the permanent Working Group of the OSD Steering Committee, the OSD Steering Committee may appoint standing or ad hoc working parties to develop solutions for specific problems, undertake studies and analyses or perform other appropriate tasks.

d. As appropriate, the OSD Steering Committee may arrange for contract support for studies and analyses.

e. At all levels of OSD Steering Committee activity, the active participation and advice of the Military Departments and Military Services will be solicited.

8. OSD Steering Committee Tasks

a. The initial task of the OSD Steering Committee will be to identify those training functions in which performance can be improved or resources saved through the application of

technology. This task requires identification of training functions which are resource intensive in terms of:

- o Funds
- o Space/land
- o Personnel
- o Materiel
- o Time.

b. Subsequent to a., above, identify and evaluate available technology that can be applied to each function nominated for enhancement.

c. Recommend to OSD, the Services, and appropriate agencies the procurement and use of appropriate technology to include recommendations as to whether the technology should be imbedded or discrete.

d. In those cases where required technology is not available, support/recommend research, development, and acquisition to satisfy identified needs.

e. The longer-term task of the OSD Steering Committee will be to continue actions that are required for assuring progress toward the expansion and exploitation of training technology to improve the effectiveness and efficiency of training. The following list of tasks is illustrative rather than exhaustive; all tasks that contribute to accomplishing the Statement of Purpose in paragraph 2 above are proper subjects of consideration for the OSD Steering Committee.

(1) Support Development of Performance Measurement and Training Effectiveness R&D Programs.

(2) Improve Managment of Training Technology.

(a) Evaluate the existing flow of information on training technology among the Military Departments and from the Military Departments to OSD and take action as appropriate to facilitate the flow and sharing of information.

(b) In coordination with the DSARC, monitor the materiel acquisition process to assure that training considerations are given the required emphasis.

(3) Enhance the Development and Use of Training Technology.

(a) Examine mechanisms that provide training technology interoperability among the Services.

(b) Monitor Service programs for procurement of the products of training technology to assure joint Service use where applicable.

(4) Improve Knowledge of Training Status, Deficiencies and Effectiveness.

(a) Support improvement of methods of evaluation of training status, deficiencies and effectiveness.

(b) Support the establishment of and oversee the Defense Training Data and Analysis Center.

THE SECRETARY OF DEFENSE

WASHINGTON, THE DISTRICT OF COLUMBIA

1 DEC 1983

MEMORANDUM FOR CHAIRMAN, STEERING COMMITTEE ON TRAINING AND TRAINING TECHNOLOGY

SUBJECT: Defense Training and Training Technology Data Center

I have reviewed your report and agree with the actions you have taken. I also endorse the Training and Training Technology Data Center Terms of Reference and your plans to initiate the Center in FY 1985. One of the next steps should be to define carefully the organizational requirements and ensure that the Center is staffed with individuals with the stature and experience required for this ambitious initiative to succeed.

We must continue to identify and pursue opportunities to enhance training effectiveness and improve the readiness of our forces. This must be the long-term mission of your Committee and, eventually, the Training and Training Data Center. Clearly, you are going in the right direction to accomplish this objective.

Paul Thayer

Paul Thayer
Deputy Secretary of Defense

THE JOINT CHIEFS OF STAFF
WASHINGTON D.C. 20301

THE JOINT STAFF

DSM- 2018 83
10 NOV 1983

MEMORANDUM FOR THE SECRETARY OF DEFENSE

Subject: Steering Committee on Training and Training Technology

1. The OSD Steering Committee held its second meeting on 1 November 1983. The committee received reports from its two subcommittees and took the actions noted below.

2. The Defense Training Data and Analysis Center Subcommittee presented, and the Steering Committee approved, the attached Terms of Reference which had been provided to the Military Department Assistant Secretaries for Manpower for their comment. We also agreed to endorse an alterntive which will be included in Program Budget Decision 216, "Advanced Technology Demonstration, allowing the Center to go into operation in FY 1985.

3. The Training Activities Subcommittee presented a list of candidate training technology areas for consideration by the committee. We agreed to consider this set of candidates for special interest and support.

4. The subcommittee presented a briefing on the Joint Operational Interface Simulation Training System (JOISTS) which is an unfunded, CINC and JCS validated joint training requirement. The committee subsequently prepared and submitted an alternative to be included in Program Budget Decision 260, "Defense Wide Mission Support," which if adopted will permit initiation of JOISTS in FY 1985. We believe this initiative is worthy of your support.

5. The committee directed the Training Center Subcommittee to accelerate efforts to develop detailed functional, operational and staffing plans for the Center, and we also tasked the subcommittee to examine the feasibility of collocating the Center with the Services' training activities in the Orlando, Florida area. Finally, the Training Subcommittee was directed to refine and prioritize the list of candidate training programs and projects.

5. Recommend you endorse the Steering Committee's actions.

RICHARD L. PRILLAMAN
Lieutenant General, USA
Committee Chairman

Attachment
a/s

- 27 October 1983

TERMS OF REFERENCE

Defense Training Data and Analysis Center

1. Basis of Establishment

a. The Under Secretary of Defense, Research and Engineering, by a memorandum of 18 June 1982, requested that the Defense Science Board ... "undertake a Summer Study on Training and Training Technology to enhance the ability of our military forces to achieve and sustain optimum weapon system performance." The DSB was tasked to specifically address the issues of training effectiveness, measurement, cost benefit trade-offs, and availability of data to support organized inquiry into these and related areas.

b. The Defense Science Board study on Training and Training Technology (November 1982) recommended that a Defense Training Data and Analysis Center be established for all training related data (cost effectiveness, performance assessment, student flow, training effectiveness, RDT&E funding, acquisition, and support).

c. The Secretary of Defense in a memorandum to the Secretaries of the Military Departments dated 25 February 1983, endorsed the recommendations made by the Defense Science Board to improve training by application of technology. He specifically addressed the need for data to evaluate performance, cost effectiveness and alternative training methods.

d. The Secretary of Defense in a 30 August 1983 memorandum to the OSD Training Steering Committee specifically endorsed the need to develop a training data and analysis center as quickly as possible.

2. Statement of Purpose. The purpose of the Defense Training Data and Analysis Center is to provide accurate and timely training data, analysis, and data summaries on a regular, systematic basis for the Defense manpower and training community. The major focus of this center is on training initiatives that will benefit more than one Service to include military and civilian personnel.

3. Scope of Effort. The Defense Training Data and Analysis Center will consider individual, unit, and team training for the military (Active and Reserve) forces. To the extent possible and, as directed, the Center will also address training data and analyses for the Defense civilian force.

The specific technical focus of the Center will include:

a. Development of training concepts, analyses, and training system requirements and the articulation of these parameters/trade-offs for consideration during the acquisition cycle.

b. Identification of training technology opportunities that would most benefit the reserve program.

c. Provision of technical support to Service training technology application efforts.

d. Analysis and evaluation of emerging technologies and utilization of these technologies against present day training requirements.

e. Analysis and evaluation of individual and unit performance measurement for purposes of improving the effectiveness of training.

f. Analyses that link training effectiveness with manpower demographics, and characteristics (especially in the maintenance training area).

Because of the size, complexity, and diversity of service training systems, the activity initially will focus on:

a. New training technologies that are a result of near-term technology changes/breakthroughs. Compile a list of the new systems and the training technologies that have the most promise for the Services.

b. Those selected training system aspects which promise the greatest benefit to more than one military component.

c. Analytical methods to increase cost effectiveness and performance evaluation on common training system issues that are applicable to all Services.

d. Improved communication, dialogue, and technology transfer within the defense training community as well as among defense, the private sector and non-defense public sector.

e. Development of criterion and parameters of the training and statistical data base required for operation of the center.

4. Definitions

a. Training is instruction and applied exercises for active and reserve forces as directed toward the acquisition, retention and transfer of skills required by military personnel. For purposes of this document, the term "training" includes the training of individuals in formal schools or while members of operational units, including on-the-job training (OJT), the collective training of crews and units of all sizes; training of forces of two or more services including analysis of joint and combined exercises; and education of military personnel.

b. Training technology is knowledge, methods, techniques and procedures which are used to develop and evaluate training systems and equipment.

c. Training data consists of:

(1) Information on trainee characteristics, training system characteristics, costs and performance histories; course content and sequencing, training cost, individual and collective training and job performance measures;

(2) Such information on new or existing weapon systems and personnel performance standards as may be required to derive training needs and requirements, determine cost effectiveness and improve procedures for training system design;

(3) Information on research and development programs and selected acquisition efforts in training and training related areas.

5. Composition

a. The Defense Training Data and Analysis Center will be staffed predominantly by Defense civilian employees with contractual support and appropriate military officers to address both Active and Reserve training. Funding and positions will be additive to existing programs and will commence with the approval of this Terms of Reference as part of the budget/program review process.

b. Initial organization will be aligned around the two primary functional areas -- (1) collection, validation and maintenance of data, and (2) analysis and interpretation of data.

c. Initial facility and administrative support for the Defense Training Data and Analysis Center will be provided by the Naval Training Equipment Center under a working agreement between Navy and OSD.

6. Organizational Relationships

a. The Defense Training Data and Analysis Center will support and have strong ties to the entire DoD manpower and training community.

b. Policy/program oversight will be provided at the OSD/JCS level by the Assistant Secretary of Defense (Manpower, Installations and Logistics) who will have primary responsibility, the Under Secretary of Defense (Research and Engineering), and the OSD Steering Committee on Training and Training Technology. Reserve applications will be worked closely with and in collaboration with the Assistant Secretary of Defense for Reserve Affairs.

c. The Navy, through the Naval Training Equipment Center, Orlando, Florida, will function as Executive Agent.

d. Technical coordination/working relationships will be established early with the individual services training advocates, Defense training activities/ organizations (e.g., PM TRADE, NAVTRAQUIPCENT, SIMSPO, TRADOC, CNET, AND ATC) and the Services manpower, personnel and training R&D centers.

e. The Defense Training Data and Analysis Center will establish a working agreement with the Defense Manpower Data Center to avoid duplication and to permit mutual transfer of pertinent data.

However, the Department has failed to demonstrate an ability to accurately estimate spares consumption patterns and has assumed a force expansion in excess of the levels thus far approved by Congress. Therefore, the Committee recommendation is based, in part, on actual force level trends and modernization lower than projected by the Department of Defense. In addition, savings above budgeted levels are expected from increased competition for spare and repair parts procurement. While the stock funds are not subject to authorization, the recommended allowance is $55,000,000 below the level instructed by authorization.

LEGISLATIVE LIAISON AND PUBLIC AFFAIRS ACTIVITIES

The Committee concurs in the House recommendation to limit funding for legislative liaison and public affairs activities below budgeted levels. The ceilings of $9,500,000 for legislative liaison and $34,200,000 for public affairs provide a margin of growth to accommodate the fiscal year 1984 pay raise for civilian and military personnel. This recommendation permits an aggregate savings of $2,600,000 from the request as reflected in the various operating account adjustment tables.

DEFENSE TRAINING DATA CENTER

This Committee has learned that the Secretary of Defense has endorsed a fiscal year 1982 Defense Science Board summer study recommendation to create a Defense Training Data and Analysis Center. The Center, located in Orlando, Fla., will serve as the repository of defense training related information incuding training effectiveness, individual and unit performance, training, and trainer costs. We strongly support this initiative and encourage the Department to expedite and fund this critical project as quickly as possible. The Defense Department should provide a status report on the Center's development by April 1, 1984.

SEALIFT CARGO RATES

A reduction of $25,000,000 is recommended, in agreement with the House allowance, based on improved competition for sealift cargo transportation. Over the last 6 months cargo rates for North Atlantic shipments alone have dropped nearly 50 percent. The recommended allowance reflects projected savings from continued competition.

PRODUCTIVITY IMPEDIMENTS

Congress has consistently supported the position that Defense civilian employment levels should be tied to a finite measurement of workload discounted by productivity improvement factors. The Committee is disturbed by a trend which appears to be eroding the sources of productivity improvements.

Nearly 96,000 DOD personnel in supervisory positions are responsible for creating and implementing productivity measures which should reduce the total number of personnel required to perform tasks. Current position classification guidance from the Office of Personnel Management dictates, in part, that supervisory [illegible] by the number of personnel supervised. [illegible] creating a disincentive to productivity, because [illegible] employing a procedure or technology to decrease personnel [illegible] yields a potential grade demotion to the supervisor responsible [illegible] implementing the innovation. The Committee feels that grade criteria should enhance, not deter, ideas to improve productivity. The Secretary of Defense is expected to submit a report to the Committee by May 1, 1984, which analyzes the impact of this administrative regulation. This assessment should be derived by input from each of the military service departments' [illegible] offices.

The Department is [illegible] to discontinue the use of procedures which [illegible] civilian [illegible] levels based on numbers of personnel supervised. The Committee [illegible] review this matter during its deliberation on the [illegible] request.

[illegible] CEILINGS

The Committee recommends [illegible] agreement with the House to prohibit the use [illegible] civilian [illegible] levels at industrially funded activities. [illegible] bill [illegible] prohibition. This continues the position [illegible] Congress in the fiscal year 1983 appropriation act. Ceilings artificially constrain accomplishment of work which must be performed at Government industrial activities. DOD should responsibly budget for personnel levels equating to budgeted workload at Government industrial activities. This eliminates the high cost of excessive overtime, temporary employees, additional rework, and training programs through greater employment stability.

Concurrently, the Committee believes that defense work which can be accomplished by the private sector should be contracted. It is the Committee's intention to monitor the effects of this provision to assure that it is not used to justify the assignment of workload at Government industrial activities simply to match the civilian personnel level assigned. This development would abuse the purposes for which this provision is intended and would surely force a reconsideration of its continuance in future years.

JCS UNIFIED AND SPECIFIED COMMANDS

The House has proposed the transfer of operating funds for JCS Unified and Specified Commands from the individual military service accounts to the Joint Chiefs of Staff line in the Defense agencies operating account. Traditionally, the military services have acted as executive agents for financial matters related to JCS Command headquarters activities. This has proved to an efficient management system since the duplicative cost of overhead at each of the headquarters to administer these funds is avoided.

Although the Committee does not recommend concurrence with the House funding transfer proposal, it shares the concern that the Organization of the Joint Chiefs of Staff (OJCS) should have a more active role in resource allocation. The Armed Services Committees are cur-

END

FILMED

7-85

DTIC